

Progress in laser systems for precision ranging, angle measurements, photometry, and data transfer

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The following recent developments of the Institute for Precision Instrument Engineering (Moscow) will be briefly reported:

-Upgrading and testing of a compact easy-deployable station for SLR, angle measurements, and photometry.

Test sessions demonstrated the capability for daytime ranging of GLONASS satellites with a receive optical system of only 25 cm in diameter.

Orders for fabrication of more than 20 such stations have been received - mostly for GLONASS spacecraft monitoring, space debris observations, astrometric and photometric observations of geostationary spacecraft, etc.

-Astrometric and photometric observations with a 35-cm-diameter wide-FOV optical system and a 16-megapixel CCD demonstrated a capability for observation of stars up to 19-th magnitude at nighttime and up to

5-th magnitude at daytime (using color and polarization filters), while angle measurement accuracy of 0.4 arcsec has been achieved.

-The BLITS (Ball Lens In The Space) experiment is planned to start late 2008.

What are the possible benefits from a satellite with a target error less than 0.1 mm?

-Development of an intersatellite ranging and data transfer link for upgraded GLONASS satellites using one-way (transponder) ranging technology.

An early one-way laser link experiment will be also reported.